

## THE INFLUENCE OF VISUAL PERCEPTION ON NAVIGATION AND CITY IMAGE: A LANDMARK STUDY IN PEKANBARU

**Fitriany<sup>1)</sup>, Al Busyra Fuadi<sup>2)</sup>, Jonny Wongso<sup>3)</sup>, Artian Ferry Marison<sup>4)</sup>, Dadang Puja Kusumah<sup>5)</sup>**  
<sup>1,2,3,4,5)</sup> Master of Architecture, Faculty of Civil Engineering and Planning, Bung Hatta University, Jl. Sumatera Ulak Karang, Padang, Indonesia  
Corresponding Author: [fitriany11925@gmail.com](mailto:fitriany11925@gmail.com)

### ABSTRAK

Penelitian ini menganalisis pengaruh persepsi visual masyarakat terhadap navigasi dan citra kota melalui peran landmark di Pekanbaru. Latar belakangnya adalah menurunnya keterbacaan visual akibat perkembangan spasial cepat dan homogenisasi arsitektur. Lima landmark utama dikaji: Masjid Agung An-Nur, Tugu Zapin, Perpustakaan Soeman HS, Kantor Gubernur Riau, dan Anjungan Seni Idrus Tintin. Pendekatan mixed-method digunakan melalui kuesioner kepada 105 responden, observasi lapangan, dan analisis Multidimensional Scaling (MDS). Hasil menunjukkan Masjid Agung An-Nur dan Perpustakaan Soeman HS berfungsi sebagai jangkar visual-afektif dengan keterbacaan dan kebanggaan tinggi. Tugu Zapin menonjol sebagai penanda arah dengan nilai budaya kuat, sedangkan Kantor Gubernur Riau dominan secara visual namun lemah secara identitas kolektif. Anjungan Seni Idrus Tintin berperan simbolik tetapi terbatas dalam navigasi. Kesimpulan menegaskan citra kota terbentuk dari interaksi antara kualitas arsitektural, fungsi navigasi, serta nilai simbolik dan emosional warga, dengan rekomendasi peningkatan visibilitas dan integrasi wayfinding berbasis budaya lokal.

Kata Kunci: Persepsi Visual, Landmark, Navigasi Kota, Citra Kota, Pekanbaru.

### ABSTRACT

*This study analyzes the influence of public visual perception on urban navigation and city image through the role of landmarks in Pekanbaru. The background stems from the declining visual legibility of the city due to rapid spatial development and architectural homogenization. Five main landmarks were examined: An-Nur Grand Mosque, Zapin Monument, Soeman HS Library, the Riau Governor's Office, and Idrus Tintin Art Pavilion. A mixed-method approach was applied using questionnaires from 105 respondents, field observations, and Multidimensional Scaling (MDS) analysis. The results indicate that An-Nur Grand Mosque and Soeman HS Library function as the city's visual-affective anchors with high legibility and civic pride. Zapin Monument serves as a directional marker with strong cultural symbolism, while the Governor's Office is visually dominant but weak in collective identity. Idrus Tintin Art Pavilion represents cultural symbolism but plays a limited navigational role. The study concludes that Pekanbaru's city image emerges from the interaction of architectural quality, navigational function, and symbolic-emotional values, recommending enhanced visibility, integrated wayfinding systems, and cultural revitalization in urban planning.*

*Keyword: Visual Perception, Landmarks, Urban Navigation, City Image, Pekanbaru.*

### 1. INTRODUCTION

Urbanization in Indonesia has accelerated rapidly, reshaping the spatial and visual structures of cities and significantly influencing how people perceive and navigate their environments. Visual

structure plays a crucial role in shaping urban perception, spatial orientation, and citizens' collective experience of the built environment. Landmarks, as dominant visual elements, not only function as reference points in wayfinding but also embody the identity and image of the city [1]. In

the Indonesian context, the development of medium-sized cities such as Pekanbaru presents challenges in maintaining urban visual legibility, particularly in relation to wayfinding and urban imageability. National data indicate that more than 56% of Indonesia's population currently resides in urban areas [2], underscoring the urgency of designing cities that provide effective visual orientation and a coherent urban identity.

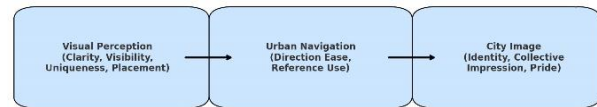
Previous studies confirm that strong visual landmarks significantly enhance spatial orientation and cognitive adaptation. Hantari and Ikaputra [3] revealed that distinct landmark elements accelerate spatial adaptation and improve urban comfort. Conversely, Kusuma and Syoufa [4] emphasized that irregular urban visual elements generate spatial confusion, weakening the cohesive image of cities. In Pekanbaru, although iconic landmarks such as the Great Mosque of An-Nur, Zapin Monument, and Soeman HS Library still exist, their symbolic meaning has been diluted due to weak integration into urban orientation systems, obstructed visibility, and competition with new generic developments.

Research in the Indonesian context has often been limited in scope, either emphasizing descriptive identification of tourism landmarks [5] or focusing on city branding [6], while neglecting the combined effects of visual perception, navigation, and city image. Purwanto and Ayuningtyas [7] stressed the relevance of neuroscience approaches in assessing visual perception, but citizen participation has often been overlooked. Likewise, Nanda et al. [8] demonstrated the effectiveness of mixed-method research in assessing urban landmarks in Surakarta, highlighting the importance of integrating quantitative and qualitative approaches.

This study addresses these gaps by employing a mixed-method approach to investigate how citizens perceive landmarks in Pekanbaru, and how such perceptions influence wayfinding and city image formation. By incorporating both quantitative survey data and qualitative insights, this research provides a holistic perspective that connects architectural visibility, spatial orientation, and cultural identity. Five main landmarks—Great Mosque of An-Nur, Zapin Monument, Soeman HS Library, Riau Governor's

Office, and Idrus Tintin Art Hall—were analyzed to represent different urban functions (religious, cultural, educational, and administrative).

The objectives of this study are threefold: (1) to analyze citizens' visual perception of landmarks in Pekanbaru, (2) to examine the relationship between visual perception and wayfinding, and (3) to assess the contribution of landmarks to the city's image. The findings are expected to enrich theoretical debates on urban imageability and wayfinding [1], while also offering practical recommendations for urban planners and policymakers in enhancing the visual legibility and cultural identity of Indonesian cities.



**Figure 1.** Research Framework

**Table 1.** Summary of Previous Studies on Visual Perception and Landmarks

Author / Year	Research Focus	Methodology	Key Findings & Relevance
Ashari (2022)	Identification of visual elements in urban corridors	Descriptive qualitative	Emphasized facade articulation and skyline silhouette as determinants of visual identity.
Pratama (2022)	Role of landmarks in wayfinding within campus environment	Survey and mapping	Demonstrated that iconic campus landmarks improve navigation and strengthen cognitive orientation.
Utomo (2008)	Growth of commercial corridor influenced by user perception and activities	Case study, observation, interviews	Highlighted that user perception of spatial continuity affects corridor development and urban legibility.
Meirta (2024)	Urban imageability in relation to collective memory of residents	Mixed-method, surveys & interviews	Found that landmarks contribute to emotional attachment, reinforcing place identity.
Fauziah (2012)	Visual quality of building facades in traditional markets	Field observation, visual analysis	Identified that facade rhythm and signage strongly affect image perception in market areas.
Topatola (2024)	Public perception of new landmark integration in waterfront development	Quantitative survey	Revealed that new landmarks require cultural resonance to be accepted as part of collective city image.

## 2. LITERATURE REVIEW

### 2.1 Visual Perception in Urban Contexts

Visual perception plays a critical role in how people interpret and navigate urban environments. Lynch [1] introduced the concept of *imageability*, emphasizing that clear forms, distinctive

silhouettes, and spatial legibility enhance a city's cognitive map. Rapoport [9] further argued that visual forms are not only interpreted through their physical attributes but also through socio-cultural associations that shape collective meaning. Relph [10] added that place identity emerges when visual perception is intertwined with lived experience, attachment, and symbolic values. These perspectives underline the significance of landmarks as both physical and cultural markers of urban space.

## 2.2 Landmarks and Wayfinding

The city image is constructed from the interaction between physical form, cultural meaning, and collective memory. Lynch [1] and Norberg-Schulz [11] highlighted that symbolic and distinctive landmarks contribute to urban identity, while Relph [10] emphasized the role of authenticity in place identity. Contemporary research in Indonesia also indicates that cultural and religious landmarks significantly influence residents' pride and sense of belonging [12], and that inconsistent visual elements can weaken urban legibility [4].

## 2.3 Theoretical Framework

This research is anchored in three theoretical strands: (1) Lynch's *Image of the City* [1], which provides the foundation for visual perception and urban legibility; (2) Rapoport's theory of human-environment interaction [9], which highlights socio-cultural interpretation of landmarks; and (3) Relph's concept of place identity [10], which links physical form with symbolic meaning. These theories collectively support the analytical framework of this study, where visual perception of landmarks influences urban navigation, which in turn shapes the city image.

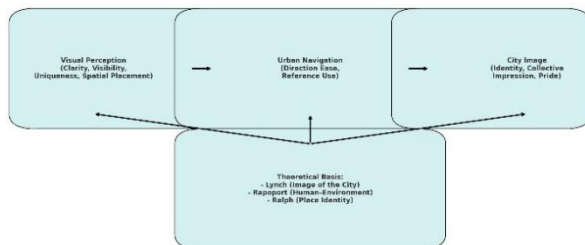


Figure 2. Conceptual Framework of Research

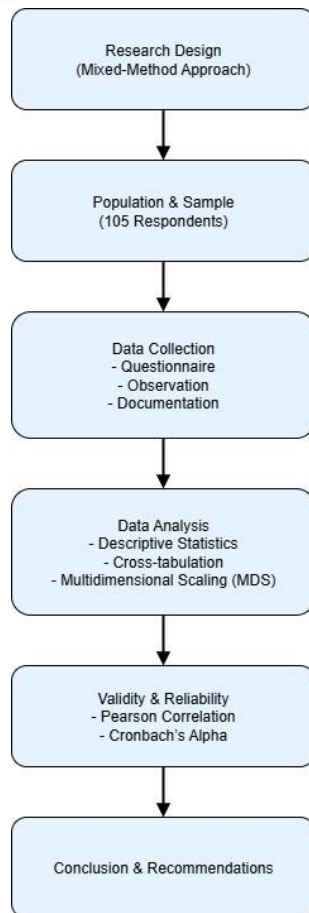
Table 2. Summary of Theoretical Foundations

Theorist / Source	Core Concept	Key Contributions	Relevance to This Study
Kevin Lynch (1960) – <i>The Image of the City</i>	<i>Imageability</i> – clarity, legibility, and distinctiveness of urban elements (paths, edges, districts, nodes, landmarks).	Introduced landmarks as crucial elements that strengthen the mental map of the city and facilitate spatial orientation.	Provides the basis for analyzing <b>visual perception</b> and how landmarks enhance legibility in Pekanbaru.
Amos Rapoport (1977) – <i>Human Aspects of Urban Form</i>	Human–environment interaction; cultural and social interpretation of built forms.	Highlighted that urban form is not only physical but also symbolic, shaped by cultural meaning and user experience.	Supports the study in understanding how <b>landmarks reflect cultural identity</b> and influence public perception.
Edward Relph (1976) – <i>Place and Placelessness</i>	Place identity; sense of place shaped by attachment, experience, and authenticity.	Argued that place identity is weakened by homogenization and placelessness, and strengthened by unique, authentic landmarks.	Provides the conceptual lens for assessing how <b>landmarks shape city image</b> and residents' emotional attachment to Pekanbaru.

## 3. RESEARCH METHODOLOGY

### 3.1 Research Design

This study applies a mixed-method approach that integrates quantitative and qualitative strategies. Quantitative data were obtained through structured questionnaires using a Likert scale (1–5), while qualitative insights were collected through field observation and documentation of landmark conditions in Pekanbaru. The research adopts an explanatory sequential design, where quantitative findings are complemented with qualitative interpretation [13].



**Figure 3.** Conceptual Framework of Research

### 3.2 Research Location and Objects

The study focuses on five major landmarks in Pekanbaru City that represent diverse urban functions:

1. Great Mosque of An-Nur (religious)
2. Zapin Monument (cultural)
3. Soeman HS Library (educational)
4. Riau Governor's Office (administrative)
5. Idrus Tintin Art Hall (cultural/performative)

These landmarks were selected due to their symbolic importance, visibility within the urban fabric, and relevance to residents' daily mobility patterns [1].

### 3.3 Population and Sample

The research population comprises Pekanbaru Residents familiar with the selected landmarks. A total of 105 respondents were recruited through purposive sampling, with

demographic variations in age, gender, and length of stay in the city. Respondent composition indicates a dominance of long-term residents (>15 years = 81.9%), reflecting perspectives of individuals strongly attached to the city [2].

### 3.4 Data Collection Techniques

#### 1. Questionnaire:

Structured Likert-scale questionnaire covering three constructs:

- Visual Perception (clarity of form, visibility, uniqueness, spatial placement)
- Urban Navigation (directional ease, reference use)
- City Image (visual identity, collective impression, civic pride)

#### 2. Observation:

Direct field observation of landmarks to capture visibility, spatial context, and accessibility.

#### 3. Documentation:

Photographs and secondary sources (urban plans, design guidelines) to complement field data.

**Table 3.** Operationalization of Research Variables

Variable	Dimension	Indicator	Measurement Scale
<b>Visual Perception</b>	Clarity of form	Respondents' assessment of landmark shape distinctiveness	Likert 1–5
	Visibility	Ease of viewing landmark from various city points	Likert 1–5
	Uniqueness	Degree of differentiation from surrounding buildings	Likert 1–5
<b>Urban Navigation</b>	Spatial placement	Strategic position in relation to road network and open space	Likert 1–5
	Directional ease	Use of landmarks as reference points for orientation	Likert 1–5
	Reference use	Frequency of using landmarks for giving/receiving directions	Likert 1–5
<b>City Image</b>	Visual identity	Role of landmarks as	Likert 1–5

	symbols of Pekanbaru	
Collective impression	Citizens' perception of landmarks as representation of the city	Likert 1–5
Civic pride	Emotional and symbolic attachment to landmarks	Likert 1–5

### 3.5 Data Analysis Methods

#### 1. Descriptive Statistics:

Frequency tabulation and proportional distribution of responses to summarize public perceptions across landmarks.

#### 2. Cross-tabulation:

To identify differences in perception by gender, age, and proximity to landmarks.

#### 3. Multidimensional Scaling (MDS):

Conducted using ALSCAL algorithm to map perceptual proximities among variables. Goodness of fit was assessed using *STRESS* and *RSQ* values, with two-dimensional solutions retained for interpretability [14], [15].

### 3.6 Validity and Reliability

Instrument validity was tested using Pearson correlation (*r*-count compared to *r*-table), while reliability was evaluated using Cronbach's Alpha (>0.7 indicating acceptable consistency) [16].

## 4. RESULTS AND DISCUSSION

### 4.1 Respondent Characteristics

**Table 4.** Characteristics of Respondents by Age, Gender, and Length of Stay

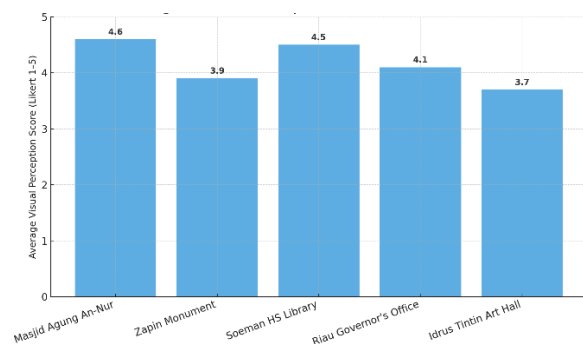
Category	Sub-category	Frequency (n)	Percentage (%)
Gender	Male	55	52.4
	Female	50	47.6
Age	< 20 years	12	11.4
	20–30 years	34	32.4
	31–40 years	28	26.7
	> 40 years	31	29.5
Length of Stay	< 5 years	6	5.7
	5–10 years	8	7.6
	11–15 years	5	4.8
	> 15 years	86	81.9
Total		105	100

A total of 105 respondents participated in this study, representing various demographic groups in

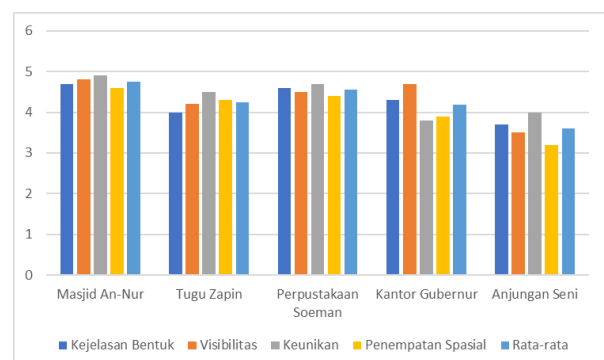
Pekanbaru. The majority of respondents had lived in the city for more than 15 years (81.9%), indicating strong familiarity and attachment to the urban environment. Gender distribution was relatively balanced, with slightly more male respondents. The demographic composition is relevant since long-term residents provide deeper insights into landmark perception and city image formation [2].

### 4.2 Visual Perception of Landmarks

Survey results demonstrate that Masjid Agung An-Nur and Soeman HS Library achieved the highest scores in terms of clarity, visibility, uniqueness, and spatial placement. These landmarks are perceived as visually dominant and culturally symbolic. In contrast, the Riau Governor's Office was rated high in physical prominence but low in symbolic identity, reflecting its limited emotional resonance among citizens. Meanwhile, Zapin Monument was recognized for its cultural symbolism, functioning as a distinct orientation marker, while Idrus Tintin Art Hall was valued more for its cultural role than navigational clarity.



**Figure 4.** Visual Perception Scores of Five Landmarks (bar chart)





**Figure 5.** Bar Chart Visual Perception Of landmark

Figure 5 shows a comparison of the visual perception scores for the five landmarks based on four indicators. The Great Mosque of An-Nur and the Soeman HS Library dominate consistently, while the Anjungan Seni Idrus Tintin shows the lowest scores in visibility and spatial placement.

#### 4.3 Landmark Role in Urban Navigation

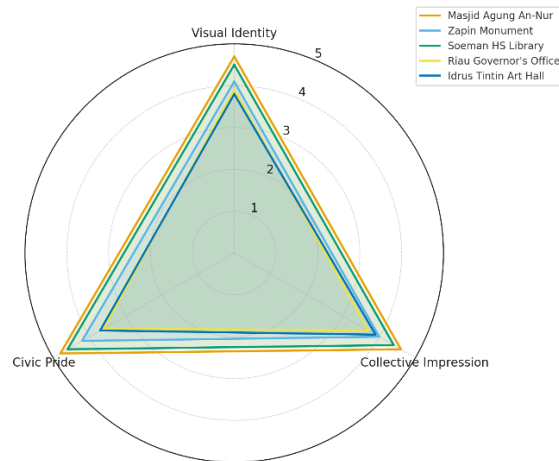
The findings reveal that Zapin Monument plays the most significant role as a reference point for giving and receiving directions, consistent with its central location at a city node. Masjid Agung An-Nur also supports navigation due to its monumental scale and visibility across multiple urban corridors. Conversely, Idrus Tintin Art Hall has a limited navigational role because of its peripheral placement and obstructed visibility.

**Table 5.** Frequency of Landmark Use in Navigation

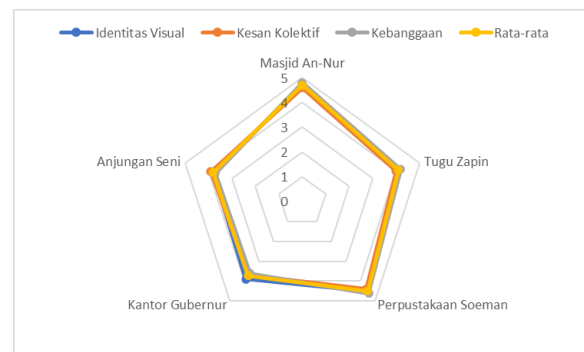
Landmark	Often (%)	Sometimes (%)	Rarely (%)	Never (%)	Total (%)
Masjid Agung An-Nur	62.9	27.6	6.7	2.8	100
Zapin Monument	70.5	22.9	4.8	1.8	100
Soeman HS Library	58.1	30.5	8.6	2.8	100
Riau Governor's Office	44.8	36.2	14.3	4.7	100
Idrus Tintin Art Hall	39.0	33.3	19.0	8.7	100

#### 4.4 Landmark Contribution to City Image

Landmarks were evaluated based on three indicators: visual identity, collective impression, and civic pride. Results show that Masjid Agung An-Nur represents the strongest identity of Pekanbaru, functioning both as a religious icon and a symbol of urban pride. Soeman HS Library was perceived as a modern cultural–educational landmark reinforcing the city's progressive image. Zapin Monument, while modest in scale, represents local cultural values. In contrast, the Riau Governor's Office was perceived as less integrated into the collective image, reflecting administrative rather than cultural symbolism.



**Figure 6.** Landmark Contribution to City Image (radar chart)



**Figure 7.** How Landmarks Contribute to a City's Image (radar chart)

The radar diagram in Figure 7 illustrates the multidimensional contribution of each landmark to the city's image. The Great Mosque of An-Nur excels in all aspects, particularly in community pride, while the Riau Governor's Office consistently maintains a moderate level.

**Table 6.** Contribution of Landmarks to City Image

Landmark	Visual Identity (Mean)	Collective Impression (Mean)	Civic Pride (Mean)	Overall Contribution
Masjid Agung An-Nur	4.7	4.6	4.8	Very High
Zapin Monument	4.1	4.0	4.2	High
Soeman HS Library	4.5	4.4	4.6	Very High
Riau Governor's Office	3.9	3.7	3.6	Moderate

Idrus Tintin Art Hall	3.8	3.9	3.7	Moderate
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#### 4.5 Multidimensional Scaling (MDS) Analysis

The MDS analysis generated a two-dimensional configuration illustrating the perceptual proximities among landmarks. The solution achieved a stress value below 0.2 and RSQ > 0.6, indicating acceptable model fit [14]. The spatial map shows Masjid Agung An-Nur and Soeman HS Library positioned as primary anchors, closely associated with positive perceptions of identity and pride. Zapin Monument was located near navigation-related dimensions, while Governor's Office and Idrus Tintin Art Hall occupied more peripheral positions in the perceptual space [15]

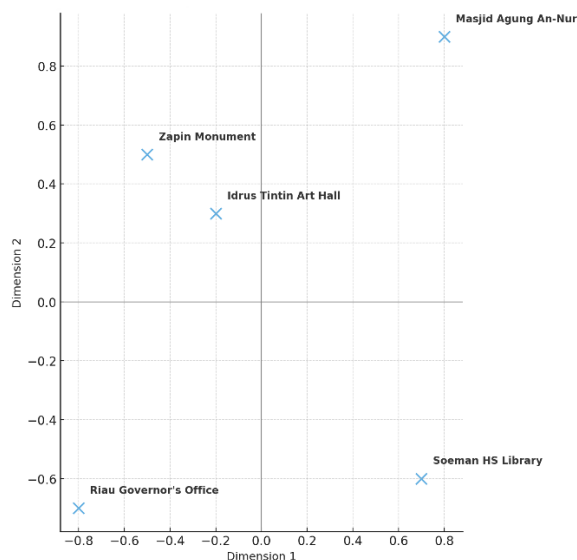


Figure 8. MDS Perceptual Map of Landmarks in Pekanbaru

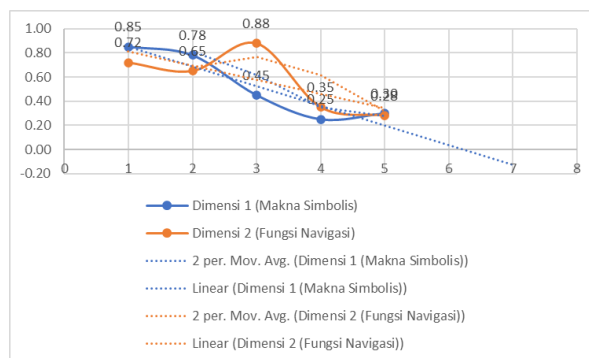


Figure 9. Multidimensional Scaling Perceptual Map

Parameter Statistik MDS:

- STRESS Value: 0.15 (Acceptable fit < 0.2)
- RSQ Value: 0.72 (Good fit > 0.6)
- Dimensi: 2 (Optimal untuk interpretasi)

The MDS perceptual map (Figure 9) visualizes the relationships between landmarks in a two-dimensional space. The cluster in the upper-right quadrant represents landmarks with strong symbolic meaning, while the Tugu Zapin stands apart as a key navigational marker.

#### 4.6 Discussion

The findings confirm that visual perception strongly influences both wayfinding and city image formation, aligning with Lynch's concept of *imageability* [1]. The prominence of Masjid Agung An-Nur and Soeman HS Library illustrates the importance of scale, visibility, and symbolic meaning in shaping collective identity. The case of Riau Governor's Office indicates that visual dominance alone is insufficient if landmarks lack cultural or emotional significance.

The role of Zapin Monument as a navigational anchor echoes findings by Golledge [17] and Passini [18], who emphasized that landmarks improve cognitive orientation when embedded in nodal points. Meanwhile, the limited impact of Idrus Tintin Art Hall highlights the challenge of integrating cultural facilities into broader urban legibility.

These results reinforce that city image emerges through the interplay of architectural form, cultural symbolism, and residents' emotional attachment, consistent with Relph's theory of place identity [10]. For Pekanbaru, strengthening visual integration, enhancing landmark visibility, and embedding cultural values into planning strategies are critical for improving both navigation and identity

## 5. CONCLUSION AND RECOMMENDATION

### 5.1 Conclusion

Based on the results of the study, several key conclusions can be drawn:

#### 1. Visual Perception

Landmarks in Pekanbaru vary in clarity, visibility, uniqueness, and spatial placement. The Great Mosque of An-Nur

and Soeman HS Library are perceived as the most dominant landmarks, functioning as visual and affective anchors of the city. Zapin Monument stands out as a cultural-symbolic marker supporting navigation, while the Riau Governor's Office, despite its visual prominence, contributes less to collective identity. Idrus Tintin Art Hall represents cultural symbolism but plays a limited role in spatial orientation.

## 2. Urban Navigation

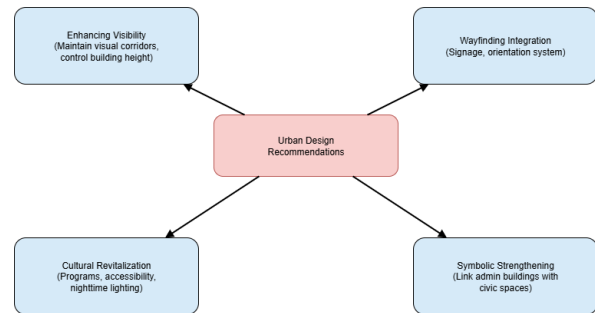
Zapin Monument and An-Nur Mosque are the most frequently used landmarks in wayfinding, strengthening Lynch's [1] concept of imageability through nodes and landmarks. Idrus Tintin Art Hall shows weak navigational utility due to peripheral placement and obstructed visibility.

## 3. City Image

The city image of Pekanbaru is strongly shaped by the combination of architectural qualities, symbolic values, and residents' emotional attachment. An-Nur Mosque and Soeman HS Library contribute the most to civic pride and collective impression, whereas the Governor's Office remains administrative in meaning rather than symbolic.

## 4. Multidimensional Scaling (MDS)

The perceptual map confirms that An-Nur Mosque and Soeman HS Library serve as anchors of identity and pride, while Zapin Monument is clustered around navigational dimensions. Idrus Tintin Art Hall and the Governor's Office occupy peripheral positions, emphasizing the need for improved visual integration.



**Figure 10.** Recommended Urban Design Strategies

## 5.2 Recommendations

### Practical Implications

#### 1. Enhancing Visibility

Urban planners should maintain visual corridors towards key landmarks (An-Nur Mosque, Soeman HS Library) by regulating building heights and avoiding visual obstructions.

#### 2. Wayfinding Integration

A structured signage and orientation system should highlight Zapin Monument and An-Nur Mosque as reference nodes to improve pedestrian and vehicular navigation.

#### 3. Cultural Revitalization

Idrus Tintin Art Hall should be integrated more actively into the urban image by improving accessibility, programming cultural events, and enhancing nighttime lighting.

#### 4. Symbolic Strengthening

The Riau Governor's Office could be reinforced as part of the city's symbolic landscape through urban design strategies that connect administrative buildings with civic spaces.

### Recommendations for Future Research

1. Employ advanced spatial analysis tools such as GIS or Space Syntax to complement perception-based methods.
2. Broaden the sample population to include visitors or tourists to compare local and outsider perceptions.
3. Explore longitudinal studies to assess how landmark perception evolves with urban growth and redevelopment.



**Table 7.** Summary of Conclusions and Recommendations

No.	Conclusions	Recommendations
1	Masjid Agung An-Nur and Soeman HS Library are dominant landmarks, functioning as visual-affective anchors of Pekanbaru.	Maintain visibility corridors and control surrounding building heights to reinforce their role as city icons.
2	Zapin Monument is a cultural-symbolic landmark that serves as a strong reference point for navigation.	Integrate Zapin Monument into wayfinding systems with clear signage and orientation aids.
3	Riau Governor's Office is visually prominent but weak in symbolic meaning and collective identity.	Enhance its symbolic presence by connecting administrative buildings with civic spaces.
4	Idrus Tintin Art Hall emphasizes cultural symbolism but has limited navigational function.	Revitalize its role through cultural programming, improved accessibility, and nighttime lighting.
5	Pekanbaru's city image emerges from the interplay of visual perception, navigation, and symbolic-emotional attachment.	Strengthen landmark-based planning policies, embedding cultural identity in urban design strategies.

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